WHAT IS CLAIMED IS:

1. A system for increasing overall fuel efficiency of a facility comprising:

a gas expansion engine for receiving a supply of pressurized gas, said expansion engine having a rotatable shaft as an energy output; and, an electric generator coupled to said rotatable shaft of said expansion engine for the purposes of generating electricity.

2. The system of Claim 1 further including a source of heat used to preheat the supply of pressurized gas.

3. The system of Claim 2 wherein the source of heat comes from recovered waste heat from reciprocating engine(s) driving at least one secondary electric generator.

4. The system of Claim 2 wherein the source of heat comes from recovered waste heat from gas fired turbine engine(s) driving at least one secondary electric generator.

5. The system of Claim 2 wherein the source waste heat comes from recovered waste heat from a plant's process via a heat exchanger.

6. The system of Claim 2 wherein the source of heat comes from a boiler feed water condenser.

7. The system of Claim 2 wherein the source of heat is recovered waste heat from flue gas from one or more pieces of fired process equipment.

8. The system of claim 1 wherein the gas expansion engine is a piston type expansion engine.

9. The system of claim 1 wherein the gas expansion engine is a turbo expander type expansion engine.

10. A preassembled composite system comprising:

a gas expansion engine for receiving a supply of pressurized gas, said expansion engine having a rotatable shaft as an energy output;

an electric generator coupled to said rotatable shaft of said expansion engine; and

a skid on which the gas expansion engine and the electric generator are mounted.

11. A preassembled composite system comprising:

a gas expansion engine for receiving a supply of pressurized gas, said expansion engine having a rotatable shaft as an energy output;

a machine having a mechanical drive coupled to said rotatable shaft of said expansion engine; and

a skid on which the gas expansion engine and machine are mounted.

12. A system for increasing overall fuel efficiency comprising:

a gas expansion engine for receiving a supply of pressurized gas, said gas expansion engine having a rotatable shaft as an energy output;

an electric generator coupled to said rotatable shaft of said expander engine; and a municipality gas distribution network for distributing at least a portion of tail gas from the gas expansion engine.

13. The system of Claim 12 wherein the gas distribution network is a distribution system located downstream of a pressurized municipality gas supply gate.

14. The system of Claim 12 wherein the expansion engine and the electric generator are preassembled and installed as a single unit.

15. A system for increasing overall fuel efficiency of an electric power generating plant comprising:

a gas expansion engine for receiving a supply of pressurized gas, said expansion engine having a rotatable shaft as an energy output;

a first electric generator coupled to said rotatable shaft of said expansion engine;

at least one boiler supplied with at least a portion of fuel gas that has been lowered in pressure by running the supply of pressurized gas through the gas expansion engine; and a second generator driven by a steam turbine using steam from said at least one boiler.

16. The system of Claim 15 wherein the expansion engine and the first electric generator are preassembled as a single unit and installed as a single unit.

17. The system of claim 15 wherein the gas expansion engine and electric generator are mounted on a skid for reduced installation time.

18. A system for increasing overall fuel efficiency of an ice-making facility comprising:

a gas expansion engine for receiving a supply of pressurized gas of a first pressure and first temperature, said expansion engine having a rotatable shaft as an energy output, said expander outputting a tail gas having a second lower temperature and second lower pressure;

at least one electric generator coupled to said rotatable shaft of said expansion engine;

an ice-making apparatus; and

at least one heat exchanger for transmitting coldness from the tail gas of the expansion engine to the ice-making apparatus.

19. The system of claim 18 wherein the gas expansion engine and first electric generator are preassembled as a single unit and installed as a single unit.

20. A system for increasing overall fuel efficiency of an ice-making facility comprising:

a gas expansion engine for receiving a supply of pressurized gas of a first pressure and first temperature, said expansion engine having a rotatable shaft as an energy output, said expansion engine outputting a tail gas having a second lower temperature and second lower pressure;

at least one pump coupled to said rotatable shaft of said gas expansion engine;

an ice-making apparatus; and

at least one heat exchanger for transmitting coldness from the tail gas of the gas expansion engine to the ice-making apparatus.

21. A system for increasing overall fuel efficiency of an HVAC system comprising:

a gas expansion engine for receiving a supply of pressurized gas of a first pressure and first temperature, said expansion engine having a rotatable shaft as an energy output, said expansion engine outputting a tail gas having a second lower temperature and second lower pressure;

at least one electric generator coupled to said rotatable shaft of said gas expansion engine;

an HVAC apparatus; and

at least one heat exchanger for transmitting coldness from the tail gas of the gas expansion engine to the HVAC apparatus.

22. The system of claim 21 wherein a gas expansion engine and electric generator are preassembled as a single unit and installed as a single unit.

23. The system of claim 21 wherein the gas expansion engine and the generator are mounted on a skid for reduced installation time.

24. A system for increasing overall fuel efficiency of an HVAC system comprising:

a gas expansion engine for receiving a supply of pressurized gas of a first pressure and first temperature, said expansion engine having a rotatable shaft as an energy output, said expansion engine outputting a tail gas having a second lower temperature and second lower pressure;

at least one compressor coupled to said rotatable shaft of said expansion engine;

an HVAC apparatus; and

at least one heat exchanger for transmitting coldness from the tail gas of the expansion engine to the HVAC apparatus.

25. The system of Claim 24 wherein the gas expansion engine and compressor are preassembled as a single unit and installed as a single unit.

26. The system of claim 24 wherein the gas expansion engine and the compressor are mounted on a skid for reduced installation time.

27. A method of increasing fuel efficiency comprising:

providing a supply of pressurized gas to the inlet of a gas expansion engine;

directing at least a portion of lower pressure gas from the outlet of the gas expansion engine to a gas consuming device;

generating a rotational force as an energy output from said gas expansion engine;

coupling said rotational force to an electric generator; and

generating electric power using said electrical generator.

28. The method of claim 27 further comprising:

preheating the supply of pressurized gas.

29. The method of claim 27 further including the steps of:

using at least a portion of the lower pressure gas from the outlet of the gas expansion engine as fuel for an engine driving a second generator.

30. The method of claim 27 further including the step of using at least a portion of the lower pressure gas from the outlet of the gas expansion engine as fuel for a boiler.

31. A method of increasing fuel efficiency comprising:

providing a supply of pressurized gas to the inlet of a gas expansion engine;

directing at least a portion of lower pressure gas from the outlet of the gas expansion engine to a gas distribution network for a municipality.

32. A method of increasing fuel efficiency comprising:

providing a supply of pressurized gas having a first pressure and first temperature to the inlet of a gas expansion engine;

directing at least a portion of the outlet gas for the outlet of the gas expansion engine to a heat exchanger; and

extracting coolness in the heat exchanger from the outlet gas having a lower second temperature.

33. The method of increasing fuel efficiency of claim 32 further comprising the step of:

using the coolness extracted from the outlet gas for an HVAC cooling device.

34. The method of increasing fuel efficiency of claim 33 further comprising the step of:

using the coolness extracted from the outlet gas in an ice making process.

35. The method of increasing fuel efficiency of claim 33 further comprising the step of:

using the coolness extracted from the outlet gas for cooling an industrial process.